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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,400	03/30/2001	Yehuda Shoenfeld	01/21885	1174
30623 7590 08/17/2010 MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C ONE FINANCIAL CENTER BOSTON, MA 02111				
EXAMINER SCHWADRON, RONALD B				
ART UNIT		PAPER NUMBER		
1644				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

09/806,400

**Applicant(s)**

SHOENFELD ET AL.

**Examiner**

Ron Schwadron, Ph.D.

**Art Unit**

1644

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_
- Paper No(s)/Mail Date 5/5/12 and 3/31/10

1. In view of the Brief filed on 12/21/09, PROSECUTION IS HEREBY REOPENED as set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below.

2. Claim 28 is under consideration.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 28 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for use of the claimed method in the mouse model disclosed in the specification, does not reasonably provide enablement for use of said method in humans to treat human disease. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The specification is not enabling for the scope of the claimed method of treating atherosclerosis using oxidized LDL in humans. The specification does not disclose how to use the claimed method in vivo in humans to treat disease. Applicant has not enabled the breadth of the claimed invention in view of the teachings of the specification because the use for the instant invention disclosed in the specification is the treatment

of disease in humans. The state of the art is such that is unpredictable in the absence of appropriate evidence as to how the instant invention could be used for treating atherosclerosis using oxidized LDL in humans.

Judge Lourie stated in Enzo Biochem Inc. v. Calgene Inc. CAFC 52 USPQ2d 1129 that:

*The statutory basis for the enablement requirement is found in Section 112, Para. 1, which provides in relevant part that:*

*The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. . . .*

*35 U.S.C. Section 112, Para. 1 (1994). "To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.' " Genentech, Inc. v. Novo Nordisk, A/S , 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997) (quoting In re Wright , 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)). Whether claims are sufficiently enabled by a disclosure in a specification is determined as of the date that the patent application was first filed, see Hybritech, Inc. v. Monoclonal Antibodies, Inc. , 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), which in this case is October 20, 1983 for both the '931 and '149 patents. 8 We have held that a patent specification complies with the statute even if a "reasonable" amount of routine experimentation is required in order to practice a claimed invention, but that such experimentation must not be "undue." See, e.g., Wands , 858 F.2d at 736-37, 8 USPQ2d at 1404 ("Enablement is not precluded by the necessity for some experimentation . . . . However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' ") (footnotes, citations, and internal quotation marks omitted). In In re Wands , we set forth a number of factors which a court may consider in determining whether a disclosure would require undue experimentation. These factors were set forth as follows:*

*(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.*

*Id.* at 737, 8 USPQ2d at 1404. We have also noted that all of the factors need not be reviewed when determining whether a disclosure is enabling. See *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1213, 18 USPQ2d 1016, 1027 (Fed. Cir. 1991) (noting that the Wands factors "are illustrative, not mandatory. What is relevant depends on the facts.").

Regarding Wands factors (4) and (8), the claims encompass treatment of atherosclerosis in vivo in humans. Regarding Wands factors (5) and (7), there is a high degree of unpredictability in the art. For example, Spack teaches that attempts to treat MS via inducing oral tolerance to myelin protein have been unsuccessful (see abstract). Similarly, the art recognizes that attempts to treat rheumatoid arthritis via inducing oral tolerance to collagen have been unsuccessful (see McKown et al.). Thus, it is recognized in the art that it is unpredictable whether human disease can be treated via inducing oral tolerance to a disease antigen. Regarding Wands factor (3), while the specification provides an example in a mouse model, there were copious amounts of mouse research that suggested that oral tolerance could be used to treat MS or rheumatoid arthritis, yet said diseases were not successfully treated in humans using oral tolerance. Regarding Wands factor (2), there is no disclosure in the specification as to what doses would be used to induce the functional parameters recited in the claim which are related to properties of the oral tolerance induction mechanism. Based on the aforementioned undue experimentation would be required of one skilled in the art to practice the instant invention using the teaching of the specification.

Regarding applicants comments and the Dorats declarations, Spack teaches that attempts to treat MS via inducing oral tolerance to myelin protein have been unsuccessful (see abstract). Similarly, the art recognizes that attempts to treat rheumatoid arthritis via inducing oral tolerance to collagen have been unsuccessful (see McKown et al.). Thus, it is recognized in the art that it is unpredictable whether human disease can be treated via inducing oral tolerance to a disease antigen. Furthermore,

applicants **own publication** (George et al., 2004) states (*5 years after the filing date of the instant application*) that: "The application of oral tolerance as a therapeutic strategy has proven successful in various immune and non-immune mediated *experimental models, yet efficacy in human disease is still pending.*". **It is noted that animal model used in said publication is essentially the same model as disclosed in the specification.**

Thus, the Inventors comments in George et al. indicate that it is recognized in the art that it is unpredictable whether human disease can be treated via inducing oral tolerance to a disease antigen. George et al. would therefore also indicate that the model used in their publication was not necessarily predicative of efficacy in humans.

***While the claim does not recite a specific mechanism of action, the disclosure in the specification indicates that the claimed method works via oral tolerance. Furthermore, the model used in the specification is essentially the same as disclosed in George et al. wherein George et al. address their treatment as a form of oral tolerance.***

Regarding applicants comments about animal models, there were a plethora of animal models used to treat MS and RA like diseases, yet Spack teaches that attempts to treat MS in humans via inducing oral tolerance to myelin protein have been unsuccessful (see abstract) and the art recognizes that attempts to treat rheumatoid arthritis via inducing oral tolerance to collagen have been unsuccessful (see McKown et al.). Regarding Wands factor (3), while the specification provides an example in a mouse model, there were copious amounts of mouse research that suggested that oral tolerance could be used to treat MS or rheumatoid arthritis, yet said diseases were not successfully treated in humans using oral tolerance. Regarding Wands factor (2), there is no disclosure in the specification as to what doses would be used to induce the functional parameters recited in the claim which are related to properties of the oral tolerance induction mechanism. Regarding applicants comments, page 19 of the specification refers to doses given to mice in a prophetic experiment for which no results were provided. Thus, it is unclear as to whether a particular dosage actually had any effect. The specification, page 18 refers to a single dosage given to mice. There is no disclosure in the specification as to dosages to be used in humans or what doses would be used to induce the functional parameters recited in the claim which are related

to properties of the oral tolerance induction mechanism. Yesair et al. teach a composition for oral administration containing LPC (see column 5, last paragraph and Examples). LPC is also a derivative of ox ldl (see specification, page 5, first complete paragraph). LPC is a modified LDL. The specification discloses that LPC has the properties of ox ldl. The specification, page 11, fourth paragraph *discloses that LPC can be used in the previously claimed method*. Yet the Harats declaration (12/18/03) discloses that LPC and other forms of modified LDL cannot be used in the claimed method (see sections 7-9). In addition, the specification discloses that: *"Lysophosphatidylcholine (LPC) is expressed in human atherosclerotic plaques. It is an active biological substance that can induce the first steps of atherogenesis. Indeed it is even more potent than Ox LDL."*(see page 5, penultimate paragraph).

Thus, even though LPC is involved in the pathogenesis of atherogenesis, oral tolerance to LPC cannot be used to treat atherosclerosis. Regarding the Harats declaration (12/18/03) and the LDLR mice model, Wouters et al. discloses that the LDLR mouse displays cholesterol metabolic pathways not found in humans (see page 474, second column, second paragraph)) and as a consequence "This route can serve as a backup mechanism for lipoprotein clearance in ldlr mice, yielding unforeseen side effects "(page 474, second column, first paragraph).

Regarding the various cited publications, while said publications may use the animal model under consideration, none of said publications disclose that the "likelihood of new molecules to work as anti-atherosclerosis drugs in humans is high". Furthermore, none of said publications address said model in the context of oral tolerance and the failure of animal models of oral tolerance to predict efficacy in humans. In addition, none of said publications disclose an *untested* drug that was later found to have efficacy in humans.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Michael et al. (US Patent 5,783,193) in view of Sima et al. (11<sup>th</sup> Int. Symp. on Atherosclerosis, page 227, October 1997) and Hansson et al. (11<sup>th</sup> Int. Symp. on Atherosclerosis, page 289, October 1997) in view of Punnonen et al. (US Patent 6,541,011).

Michael et al. teach use of an enteric coated granule composition containing an autoantigen to treat autoimmune disease (see column 4, last paragraph continued on column 5 and column 5, first complete paragraph). Michael et al. do not teach that the autoantigen is human oxidized LDL. Sima et al. teach that ox LDL is an immunoreactive component/autoantigen in the atherosclerotic process in humans with atherosclerosis and a hamster model of atherosclerosis (see entire abstract, especially last sentence). Hanson et al. disclose that T cell reactivity against ox LDL contributes to atherosclerosis (see abstract). Punnonen et al. teach that oral tolerance has been used in a variety of mouse models to induce tolerance to autoantigens (column 27, third paragraph). The induction of oral tolerance in the hamster model (aka use of the claimed invention in a subject) can be used to establish whether the disease induced in the aforementioned hamster model is immunologically mediated. It could also potentially reveal what immune mechanisms are involved in the aforementioned model (eg. antibody versus T cell, etc). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have created the claimed invention because Michael et al. teach use of an enteric coated granule composition containing an autoantigen to treat autoimmune disease, Sima et al. disclose an animal model of atherosclerosis wherein ox LDL is an immunoreactive component in the atherosclerotic



process and Hanson et al. disclose that T cell reactivity against ox LDL contributes to atherosclerosis whilst Punnonen et al. teach that oral tolerance has been used in a variety of mouse models to induce tolerance to autoantigens. One of ordinary skill in the art would have been motivated to do the aforementioned because treatment of the hamster model of Sima et al. using the method of Michael et al. would provide a model for the study of the mechanisms involved in said disease model. It is noted that the instant rejection renders obvious the use of the claimed invention in an animal model.

7. No claim is allowed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ron Schwadron, Ph.D. whose telephone number is 571 272-0851. The examiner can normally be reached on Monday-Thursday 7:30-6:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on 571 272-0841. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Application/Control Number: 09/806,400

Page 9

Art Unit: 1644

Supervisory Patent Examiner, Art Unit 1644